NERRS Science Collaborative Progress Report for the Period 09/01/10 through 02/28/11

Project Title: Sustaining Coastal Landscapes and Community Benefits: Developing an Interdisciplinary Model for Enhancing the Impact of NERRS Science

Principal Investigator(s): Dr. Christine Feurt

Project Investigators Wells NERR Science Collaborative Team {Maintains connection of project with sector interests and programs at the Reserve}
Dr. Christine Feurt (Science Integrator), Dr. Michele Dionne, Tin Smith, Suzanne Kahn Eder, Jeremy Miller, Sue Bickford

Titles: Coastal Training Program Coordinator, Research Coordinator, Stewardship Coordinator, Education Coordinator, SWMP Manager, GIS Specialist

Project Research Team {Interdisciplinary team designs and conducts economics, ecological and communication research in collaboration with stakeholders}
Co-Principal Investigator: Dr. Robert Johnston, Director, George Perkins Marsh Institute and Professor, Department of Economics Clark University
Dr. Verna DeLauer, George Perkins Marsh Institute, Research Scientist
Peter Wiley, NOAA, Coastal Services Center
Dr. Michele Dionne, Research Coordinator, Wells NERR
Dr. Christine Feurt, Coastal Training Program, Wells NERR

Project start date: Fall 2010 (Agreements/subawards formalized among UNH, Wells National Estuarine Research Reserve (NERR) and Clark University)

Report compiled by: Chris Feurt

Contributing team members and their role in the project:

(See above for Wells NERR project team and Research Team composition)

Wells NERR Stakeholder Network {Participated in the development of the proposal and will be engaged throughout the project to provide feedback on research design and incorporation of results in conservation, management and planning.}

1. Maine Geological Survey
2. Maine Association of Conservation Commissions
3. Maine Coastal Program
4. Maine Nonpoint Education for Municipal Officials (NEMO)
5. Maine Sea Grant
6. Maine Drinking Water Program
7. Maine Department of Inland Fisheries and Wildlife, Beginning with Habitat
8. Maine Department of Environmental Protection
9. Maine Department of Marine Resources
10. Southern Maine Regional Planning Commission
11. Mt A to the Sea Conservation Initiative
12. Rachel Carson National Wildlife Refuge
13. University of New England
14. Laudholm Trust

15. Piscataqua Region Estuaries Partnership
16. Town of Wells, Planning Department
17. Town of Sanford, Planning Department
18. Town of Kennebunk, Planning Department

A. **Progress overview**:

Overall Goal of Project

The proposed project will develop and apply an integrated, spatially-explicit, transdisciplinary framework to characterize and quantify the impact of riparian management on ecosystem services identified as important by Wells NERR stakeholders including land use decision makers, planners and policymakers at state and municipal governmental scales and partner NGOs. Building on ecological models and data available for the Wells NERR, including data in SWMP, the project will coordinate economic expertise in ecosystem service valuation with Wells natural scientists to provide defensible estimates of social benefits associated with riparian area management in the Wells NERR region, as realized through changes in ecosystem services. Quantification of values and tradeoffs associated with management alternatives will provide information crucial for policy design and to identify often overlooked benefits of policies to enhance ecosystem sustainability. Integrated components of the proposed project will ensure that science-based results are applied effectively to inform coastal management decisions and that results are transferrable to other Reserves. Outputs will provide heretofore unavailable mechanisms through which NERRS data can be used in coordination with stakeholders to inform coastal management decisions.

Overall Project Objectives

I. Develop a user-inspired, transdisciplinary model to guide sustainable riparian management in the Wells NERR and surrounding watersheds, grounded in geo-spatially explicit quantification of ecological/economic tradeoffs in ecosystem services and values.

II. Coordinate social science and cognitive theory, principles of effective communication, local motivations for stewardship/conservation, and approaches for social learning to:
    a. Identify specific stakeholders most influential in affecting decisions, management and policy change affecting Wells NERR riparian areas addressed in Objective I.
    b. Evaluate Wells NERR communication approaches to these identified stakeholders/stakeholder groups to assess the degree to which messages are in alignment with values and priorities identified in Objective I;
    c. Develop high impact, science-based communication strategies and decision support tools—based on the ecological/economic results of Objective I—to inform integrated management of riparian area land use, habitat and nonpoint source pollution in watersheds draining into the Wells NERR region.

III. Engage Wells NERR stakeholders, the Science Collaborative Team and the project's Research Team within a collaborative learning process to build long-term institutional and regional capacity for improved riparian management through a community of practice. Collaborative learning will be grounded in coordinated science, communication and decision support outputs of Objectives I and II.

IV. Based on results of prior objectives, develop transferable templates for application of developed methods to guide policy development and stakeholder interactions in other Estuarine Reserves. Integrate with NERRS/NOAA to assist in broader adoption.

Objectives for the period September 2010 – February 2011

1. Develop financial agreements between Wells NERR and UNH and Clark University
2. Secure Institutional Review Board (IRB) approval for human subjects research through Clark University (approved February, 2011)
3. Review and discussion of project implementation by Wells NERR Science Collaborative Team during meetings in October, November, December and January.
4. Engage Wells NERR Stakeholder Network in first workshop to preview the project, solicit input and seek participation on an Advisory Committee (Details in Section B below)
5. Research Team meeting to review roles and timelines for milestones. Conference call of all research team members February 28, 2011 including overview of each researcher's part of the project, progress to date, schedule for the period through July 1. (Meeting minutes prepared and on file, along with supporting documents suggested by each researcher to be shared in order to build interdisciplinary understanding among the research team)
6. Design ecological monitoring protocols for nitrogen assessment including sights on both the Branch Brook and Merriland Rivers using nitrogen sensors and in situ nitrogen monitoring bags.

B. Working with Intended Users: Stakeholder/Researcher Workshop

Regional Natural Resources
Provider's Summit
Wednesday, December 8, 2010
9:00 am until 2:00 pm
Mather Auditorium, Wells National Estuarine Research Reserve

A forum for discussion of shared priorities and challenges to conserving ecosystem services in southern Maine communities.

AGENDA

9:00am **Welcome**

Program Updates, Communication Priorities, Sustaining Ecosystem Services

9:00 Welcome and Introductions
9:15 Southern Maine Regional Planning Commission
9:30 Town of Sanford
19:45 Piscataqua Regional Estuaries Partnership (PREP)

10:00am **Review and discussion of "Sustaining Coastal Landscapes and Community Benefits Project"**

The Wells Reserve recently received funding through a national competition from the NERRS Science Collaborative. Our project was developed in collaboration with some of you and will be a three year project focusing on ecosystem services associated with riparian areas. The project includes an economic component paired with an ecological component to assess values and support for policies

related to riparian buffers. The project also includes a communications audit of the messages we currently use to motivate riparian buffer management and conservation in light of the research about their role in providing ecosystem services that people value and want. Researchers from the Wells Reserve will partner with researchers from Clark University's George Perkins Marsh Institute and NOAA's Coastal Services Center and all of you in this project. Presentations by Dr. Rob Johnston and Dr. Verna DeLauer introduced stakeholders to the ecological economics and communications portions of the research project.

12:00 **Networking Lunch**

Program Updates, Communication Priorities, Sustaining Ecosystem Services
Continue updates from organizations and communities …

Maine Drinking Water Program
Maine NEMO
Maine DEP
Maine Association of Conservation Commissions
MtA2C Conservation Initiative
Rachel Carson National Wildlife Refuge

2:00pm **Adjourn**

In Attendance:

Jodi Castallo, Mt Agamenticus to the Sea Conservation Initiative, mta2c@gwrlt.org, 646-3504
Elizabeth Hertz, Maine State Planning Office, elizabeth.hertz@maine.gov
Rachel Rouillard, Piscataqua Region Estuaries Partnership (PREP), Rachel.Rouillard@unh.edu,
Keith Fletcher, Maine Coast Heritage Trust (MCHT), kfletcher@mcht.org
Donald Kale, Maine DEP, Donald.Kale@maine.gov
Barbara Welch, Maine DEP, Barb.Welch@Maine.gov, (207) 287-7682
LaMarr Clannon, Nonpoint Education for Municipal Officials (Maine NEMO), lcannon@maine.rr.com
Andrew Tolman, Maine Drinking Water Program, andrews.l.tolman@maine.gov
Marcel Pollack, Maine Association of Conservation Commissions, marcel@meacc.net
Steve Walker, Maine Beginning with Habitat Program, Steve.Walker@maine.gov
Paul Schumacher, Southern Maine Regional Planning Commission, pschumacher@smrpc.org
Rob Johnston, George Perkins Marsh Institute of Clark University, rjohnston@clarku.edu
Verna DeLauer, Research Scientist, Clark University, vdelauer@clarku.edu
Judy Bernstien, Kennebunk Town Planner, Jbernstein@kennebunkmaine.us
Jim Gulnac, Sanford Planning Department, jqgulnac@sanfordmaine.org
Dolores Leonard, NERRS Science Collaborative, Dolores.Leonard@unh.edu
Kalle Matso NERRS Science Collaborative "Kalle Matso" <kalle.matso@unh.edu>
Chris Feurt, WNERR, cfeurt@wellsnerr.org
Annie Cox, WNERR, acox@wellsnerr.org
Paul Dest, WNERR, dest@wellsnerr.org

Tin Smith, WNERR, tsmith@wellsnerr.org
Jake Aman, WNERR, jacobaman@wellsnerr.org
Suzanne Kahn Eder, WNERR, Suzanne@wellsnerr.org
Michelle Dione, WNERR, dionne@wellsnerr.org
Ward Feurt, Rachel Carson National Wildlife Refuge, Ward_Feurt@fws.gov

Key Lessons Learned from December 8, 2010 stakeholder workshop:

The project has strong connections to existing efforts in Maine and New Hampshire represented by members in attendance. Economic constraints are affecting most organizations including municipal and state agencies and their abilities to serve communities in their work to protect and maintain valued ecosystem services. The coupled economic, ecological and communication work outlined by the research team was well received by the group and a number in attendance asked to be included on the Advisory Committee which will be formed during the next reporting period. Just as important to the project was the opportunity for the research team to learn about the programs currently in place by stakeholder organizations and governments. All comments were captured and recorded in meeting minutes. Additional input was provided by interviews conducted with select participants by Kalle Matso and provided to the research team.

There were no changes to the research design, methods for integration of stakeholders and project objectives as a result of this workshop. During the next period the Advisory Committee will be formed, stakeholders will be engaged in interviews and focus groups and public outreach about the project will be implemented through the Wells NERR website.

C. Progress on project objectives for this reporting period:

See stakeholder report in section B for data collected (meeting minutes)

During the next reporting period

Research team will convene an ecology meeting with Dr. Michele Dionne to develop economic and communication protocols that are coupled to ecological aspects of the project and to develop shared ecological knowledge to ground the research team in a common language and literature base. These meetings require researcher travel to Wells NERR and will be April 18 and 29.th Ecology meetings will be combined with interactions with Wells NERR Science Collaborative Team and key stakeholders to develop focus group protocols and begin work on mental models of ecosystem services.

Ecological monitoring of riparian buffer function will begin after ice out on the rivers.

Focus groups to determine public support for policies and practices of riparian buffer management will begin.

Conduct interviews of scientists, Wells NERR staff and key stakeholders to develop mental models of ecosystem services.

D. Benefit to NERRS and NOAA: List any project-related products, accomplishments, or discoveries that may be of interest to scientists or managers working on similar issues, your peers in the NERRS, or to NOAA. These may include, but are not limited to, workshops,

trainings, or webinars; expert speakers; new publications; and new partnerships or key findings related to collaboration or applied science.

None to report for this period

E. Describe any activities, products, accomplishments, or obstacles not addressed in other sections of this report that you feel are important for the Science Collaborative to know.

None to report for this period